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NASA Procedural Requirements

COMPLIANCE IS MANDATORY**NPR 8715.6A**
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 (NASA Only)

Subject: NASA Procedural Requirements for Limiting Orbital Debris

Responsible Office: Office of Safety and Mission Assurance[| TOC](#) | [Preface](#) | [Chapter1](#) | [Chapter2](#) | [Chapter3](#) | [AppendixA](#) | [AppendixB](#) | [ALL](#) |

Chapter 2. Program/Project Development and Prelaunch Preparations

2.1 Orbital Debris Program Setup and Control

2.1.1 The NASA Program/Project Manager shall implement orbital debris requirements for those portions of a spaceflight program/project over which NASA has control as defined by paragraph P.2.2 ([Requirement 56793](#)).

2.1.2 The NASA Program/Project Manager shall include the applicable design requirements stated in NSS 1740.14 in the program/project requirements unless a variance to the requirements has been granted per NPR 8715.3, paragraph 1.13 ([Requirement 56794](#)).

2.1.3 The NASA Program/Project Manager and the contracting officer for the program/project shall include requirements in this NPR in agreements and contracts necessary to ensure compliance with this NPR unless a variance to the requirements has been granted per NPR 8715.3, paragraph 1.13 ([Requirement 56795](#)).

2.1.4 When a spacecraft is jointly developed/built/managed by multiple NASA Centers/facilities using NASA-STD 8719.14, the Program/Project Manager at each NASA Center/facility shall deliver an abbreviated ODAR per NASA-STD 8719.14, Appendix A, Section A.3, as a part of the hardware delivery to the program/project integrator covering those spacecraft portions under their control ([Requirement 57300](#)).

2.1.4.a When a spacecraft is jointly developed/built/managed by multiple NASA Centers/facilities using NSS 1740.14, the Program/Project Manager at each NASA Center/facility shall deliver either a full ODAR per NSS 1740.14, Chapter 8, or an abbreviated ODAR per NASA-STD 8719.14, Appendix A, Section A.3, as a part of the hardware delivery to the program/project integrator covering those spacecraft portions under their control ([Requirement 57301](#)).

2.1.5 When a spacecraft is jointly developed/built by multiple organizations where NASA is using NASA-STD 8719.14, and NASA is not the launching or lead Agency, the NASA Program/Project Manager shall provide an abbreviated ODAR to the non-NASA launching or lead Agency per NASA-STD 8719.14, Appendix A, Section A.3, as a part of the delivery of the hardware data package covering only those spacecraft portions being developed/integrated by the NASA organization as permitted by International Traffic in Arms (ITAR) and other data restrictions ([Requirement 57302](#)).

2.1.5.a When a spacecraft is jointly developed/built by multiple organizations where NASA is using NSS 1740.14, and NASA is not the launching or lead Agency, the NASA Program/Project Manager shall provide either a full ODAR per NSS 1740.14 Chapter 8 or an abbreviated ODAR per NASA-STD 8719.14, Appendix A, Section A.3, to the non-NASA launching or lead Agency as a part of the delivery of the hardware data package covering only those spacecraft portions being developed/integrated by the NASA organization as permitted by International Traffic in Arms Regulations (ITAR) and other data restrictions ([Requirement 57303](#)).

Note: This NPR does not specify how the non-NASA lead Agency uses the provided ODAR or what orbital debris requirements apply. The delivery of an abbreviated ODAR is intended to assist the lead Agency in meeting their local, national, or international orbital debris requirements. Note: Processing of

ITAR and other restricted data/information generated or handled by personnel who are not civil service personnel (i.e., Jet Propulsion Laboratory, Applied Physics Laboratory) should be reviewed with the NASA contract manager prior to shipment outside of NASA.

2.1.6 When a spacecraft is jointly developed/built by multiple organizations outside of the United States or is restricted by national defense or corporate proprietary restrictions, and the ODAR contains material restricted by export control laws and regulations, the ODAR material delivered to the NASA ODPO needs to contain all ITAR/restricted information in addition to the "filtered" ODAR being provided to organizations outside of the United States by NASA.

2.1.7 The NASA Program/Project Manager shall include a review of the orbital debris requirements derived from this NPR and NSS 1740.14 or NASA-STD 8719.14, as applicable per paragraph P.2.4, as a part of the program/project System Requirements Review (or equivalent early review) ([Requirement 57306](#)).

2.2 Orbital Debris Risk Assessments

2.2.1 Orbital Debris Assessment Report (ODAR)

2.2.1.1 The NASA Program/Project Managers shall assess the mission for compliance with this NPR and NSS 1740.14 or NASA-STD 8719.14, as applicable per paragraph P.2.4, for generation of orbital debris during all mission phases ([Requirement 57307](#)).

2.2.1.2 The NASA Program/Project Managers shall prepare and deliver the mission orbital debris assessments to the MDAA in an ODAR per the format and content defined in NSS 1740.14 or NASA-STD 8719.14, as applicable per paragraph P.2.4, for all objects being launched as defined in paragraph P.2.2 ([Requirement 57308](#)).

2.2.1.3 The MDAA shall submit each draft/final ODAR to the Chief/OSMA and AA/SOMD (for missions that could pose a risk to humans in space) for review ([Requirement 56806](#)).

2.2.1.4 The ODAR may be submitted in electronic format.

2.2.1.5 If orbital debris is assessed to impact the Earth's surface within 25 years, copies of the updated and final ODAR shall be submitted by the MDAA to the NASA Headquarters Environmental Management Division, the AA/OER, and the Office of the General Counsel ([Requirement 56808](#)).

2.2.1.6 The cognizant MDAA shall approve the final ODAR after review by OSMA and SOMD (for missions that could pose a risk to humans in space) and, if required, the offices listed in paragraph 2.2.1.5 of this NPR ([Requirement 56809](#)).

2.2.1.7 The Program/Project Manager shall submit the initial mission ODAR prior to the spacecraft PDR or equivalent NASA Program/Project or project milestone ([Requirement 56810](#)).

2.2.1.8 The Program/Project Manager shall submit the updated mission ODAR no later than 45 days prior to the spacecraft CDR or equivalent NASA program or project milestone ([Requirement 56811](#)).

2.2.1.9 The Program/Project Manager shall submit the final mission ODAR no later than 30 days prior to the opening of the launch window or 30 days prior to the NASA SMA readiness review described in NPR 8705.6, whichever comes first ([Requirement 56812](#)).

2.2.1.10 ODA analyses and discussions are not needed, and may be replaced with a placeholder explanatory text, for mission portions which occur beyond Earth orbit and are not (or will not be) in an orbit about another solar system body.

2.2.2 End-of-Mission Plan (EOMP)

2.2.2.1 Program/Project Managers shall assess the mission for compliance with this NPR and NSS 1740.14 for proper disposal of the spacecraft and the launch vehicle for the portion of the program/project funded, managed, or operated by NASA ([Requirement 56815](#)).

2.2.2.2 Program/Project Managers shall prepare, update, and deliver an EOMP per the format and content defined in NSS 1740.14 or NASA-STD 8719.14, as applicable per paragraph P.2.4, for the configuration of the space vehicles anticipated at EOM for all objects as defined in paragraph P.2.2 ([Requirement 57309](#)).

2.2.2.3 The Program/Project Manager shall submit each draft EOMP to the Chief/OSMA, the AA/SOMD (for missions that could pose a risk to humans in space), and the cognizant MDAA for review ([Requirement 56817](#)).

2.2.2.4 For missions traveling beyond geosynchronous Earth orbit (GEO) disposal orbits, the MDAA shall submit each draft EOMP to the NASA Planetary Protection Office for review, subject to NPR 8020.12 ([Requirement 56818](#)).

2.2.2.5 The EOMP may be submitted in electronic format.

2.2.2.6 If the spacecraft or launch vehicle stages are designed for reentry at EOM and assessed to impact the

Earth's surface, copies of the prelaunch and final EOMPs shall be submitted by the MDAA to the NASA Headquarters Environmental Management Division, the AA/OER, and the Office of the General Counsel ([Requirement 56820](#)).

2.2.2.7 The cognizant MDAA shall approve the prelaunch and final EOMPs after review by OSMA, SOMD (for missions that could pose a risk to humans in space), ESMD, and, if required, the offices listed in paragraph 2.2.2.6 of this NPR ([Requirement 56821](#)).

2.2.2.8 The Program/Project Manager shall submit the initial draft EOMP no later than 45 days prior to the spacecraft CDR or equivalent program or project milestone ([Requirement 56822](#)).

2.2.2.9 The Program/Project Manager shall submit the Prelaunch EOMP no later than 30 days prior to the opening of the launch window or 30 days prior to the SMA readiness review described in NPR 8705.6, whichever comes first ([Requirement 56823](#)).

2.2.2.10 The MDAA shall ensure the EOMP is periodically (annually at a minimum) reviewed and updated throughout the life of the program/project per the schedule in the EOMP ([Requirement 56824](#)).

NOTE: It is recommended that the EOMP updates and reviews occur with the Mission Directorate senior management programmatic, budget, and instrumentation reviews that are conducted for the mission and the spacecraft. It is also intended that the EOMP be used as an integral input to the series of decisions leading up to the decision to decommission the spacecraft.

2.2.2.11 The MDAA shall approve the EOMP no later than 30 days prior to the submission of the EOM notification per NPD 8010.3 or 30 days prior to the commencement of EOM maneuvers or passivation, whichever comes first ([Requirement 56826](#)).

2.2.2.12 EOMP analyses and discussions are not needed and may be replaced with a placeholder explanatory text for mission portions which occur beyond Earth orbit and are not (or will not be) in an orbit about another solar system body.

2.2.2.13 For missions disposing of spacecraft beyond GEO disposal orbits that are not (or will not be) in orbit about another solar system body, the EOMP may be replaced with a memorandum from the MDAA stating the disposal location/conditions, subject to NPR 8020.12.

2.2.3 NASA ODPO Review

2.2.3.1 The NASA ODPO shall provide technical review of each ODAR and EOMP to assist in determination of compliance with this NPR and NASA-STD 8719.14 (with allowances for formatting differences if NSS 1740.14 is being used per Paragraph P.2.4) ([Requirement 57310](#)).

2.2.3.2 The NASA ODPO shall provide reviews of ODARs and EOMPs to OSMA using the formats specified in NASA-STD 8719.14, Appendices A and B (with allowances for formatting differences if NSS 1740.14 is being used per Paragraph P.2.4 ([Requirement 57311](#)).

2.2.3.3 OSMA shall provide the results of the technical reviews of ODARs and EOMPs to the MDAA, the Headquarters Program Executive, and the Program/Project Manager within 30 days of receipt of the ODAR or EOMP ([Requirement 56832](#)).

2.2.4 Risk Acceptance

2.2.4.1 The MDAA shall review all noncompliances identified in ODARs and EOMPs and perform a risk tradeoff on meeting the requirements stated in this NPR and NSS 1740.14 or NASA-STD 8719.14, as applicable per paragraph P.2.4, with other programmatic restrictions such as cost, schedule, and launch constraints ([Requirement 57312](#)).

2.2.4.2 For any noncompliances to these requirements, the MDAA shall submit a memorandum to the Chief/OSMA, with a copy to the NASA Chief Engineer and AA/SOMD (for missions that could pose a risk to humans in space), stating the acceptance of the risk with the reasons and justification for the noncompliance as a part of the final ODAR and as a part of the final EOMP ([Requirement 56835](#)).

2.2.4.3 For any noncompliances that are repetitive in nature, applying to a class of spacecraft systems or launch vehicles and therefore multiple missions, the MDAA may submit a memorandum to the Chief/OSMA, with a copy to the NASA Chief Engineer, showing the cost and technical justification for noncompliance and stating the acceptance of the risk. The Chief/OSMA must concur with the analysis for acceptance of the noncompliance for multiple missions. This memorandum shall be a part of the applicable missions' final ODAR and final EOMP.

Note: The process for requesting and granting of variances (e.g.: waivers, deviations, exceptions) to the requirements in this NPR and NSS 1740.14 is defined in NPR 8715.3, paragraph 1.13.

2.2.4.4 MDAA memoranda accepting orbital debris risk associated with launch and flight operations shall be provided a minimum of 30 days prior to launch or prior to the prelaunch Safety and Mission Success Review, whichever is earlier ([Requirement 56838](#)).

2.2.4.5 MDAA memoranda accepting orbital debris risk associated with EOM shall be provided a minimum of four weeks prior to commencement of the EOM maneuvers or passivation launch or prior to the EOM Safety and Mission Success Review, whichever is earlier ([Requirement 56839](#)).

2.2.4.6 Any decision to deviate from the mitigation requirements shall be reviewed and concurred in by the Chief/OSMA prior to launch and/or commencement of EOM maneuvers or passivation ([Requirement 56840](#)).

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